ABSTRACT OF THE DISCLOSURE

A complementary metal oxide semiconductor (CMOS) image sensor includes at least a non-single-crystal-silicone-base substrate, an opaque layer, a polysilicon layer, a source, a drain, a gate dielectric layer, a first transparent gate electrode, and a second gate transparent gate electrode. The opaque layer is formed on the non-single-crystal-silicone-base substrate, and the polysilicon layer, formed on the opaque layer, has a charge-generating region. The source and the drain are formed in the polysilicon layer, and a pre-channel region is formed between the source and the drain. The source is located between the pre-channel region and the charge-generating region. The gate dielectric layer is formed on the polysilicon layer, and the first and the second transparent gate electrodes, formed on the gate dielectric layer, are respectively located above the charge-generating region and the pre-channel region.

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